REMARKS

The Applicant appreciates the Examiner's courteous and quick Office Action. The Applicant also greatly appreciates the Examiner's indication that claims 12, 13, 15, 16, 26, 27, 29 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-11, 14, 17-25, 28, and 31-40 are pending in the application. Claims 1-11, 14, 17-25, 28, and 31-40 stand rejected. Claims 1, 3, 19-20, 31 and 33 have been amended. Claims 12, 13, 15, 16, 26, 27, 29 and 30 have been canceled. Applicant respectfully requests reconsideration in view of the following remarks.

Rejection Under 35 U.S.C. §112, Second Paragraph

The Examiner has rejected claims 31-40 under 35 U.S.C. §112, second paragraph, contending that they are indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 31 teaches "at least one metal in an amount effective to catalyze", but allegedly fails to teach what is being catalyzed or the nature of the metals. Since almost any metal may act as a catalyst under various conditions, the scope of the claims is allegedly uncertain.

The Applicant respectfully traverses, and respectfully directs the Examiner's attention to the amendments to claim 31 herein.

It was the Applicant's intent that the "at least one metal ion in an amount effective to catalyze" being followed by a colon ":" indicated that what was being catalyzed was what followed the colon, namely "at least one polyol, in an amount effective to eventually reduce the pH of the fluid and break down the polysaccharide backbone directly". The Applicant regrets any confusion this claim structure may have caused, and has deleted the colon.

Further, the Applicant has specified the metal ion with greater particularity. Support for the specificity of the metal ion is found in the application as filed on page 7, lines 4-7, and in claims 12, 13, 15, 16, 26, 27, 29 and 30 as originally filed.

Because of these amendments, it is respectfully submitted that claim 31 (and thus all claims dependent thereon) now particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

Rejection Under 35 U.S.C. §102

The Examiner has rejected claims 1-11, 14, 17-25, 28 and 31-40 under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Pat. No. 5,877,127 to Card, et al.

The Examiner finds that Card, et al. teaches a method of fracturing a subterranean formation in which an aqueous fluid gelled with a polysaccharide, and containing a polyol within the scope of the present invention is used (examples, Tables 1, 2 and 3 and col. 11, lines 18-62). Metal ion compounds such as cobalt and nickel hydroxides may be used therein (column 9, lines 17-35). The Examiner asserts that such nickel and cobalt compounds would inherently act as catalysts in the present invention. With respect to claim 31, the Examiner alleges that any metal taught in Card, et al. would anticipate, since what is being catalyzed, and the scope of the metal is not disclosed.

The Applicant respectfully traverses.

A patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047, 34 U.S.P.Q.2d 1565 (Fed. Cir.), cert. denied, 116 S.Ct. 516 (1995).

Card, et al. teaches controlling the delay time of aqueous borate-cross-linked polysaccharide fluids using polyols. Card, et al. does not teach the use of metal ion catalysts *per se*. Card, et al. teaches the use of pH control agents (col. 9, lines 16-35), which can be $Co(OH)_2$ and Ni(OH), among others. The Examiner alleges that the metal ions in these compounds would inherently act as catalysts, even if Card, et al. did not intend them to be.

The Applicant would respectfully direct the Examiner's attention to the amendments to claims 1, 19 and 31 where the metal ion has been further specified. Support for these amendments is found in the in the application as filed on

page 7, lines 4-7, and in claims 12, 13, 15, 16, 26, 27, 29 and 30 as originally filed. (These dependent claims have been canceled as redundant.) These dependent claims are the ones that the Examiner helpfully indicated are allowable. This more specific list does not encompass cobalt hydroxide or nickel hydroxide as taught by Card, et al. It is thus respectfully submitted that the single prior art reference does not disclose each and every limitation of the claims, as amended and that the subject 35 U.S.C. §102(b) rejection is avoided. Card, et al. does not teach or suggest the more particularly recited metal ions. Reconsideration is respectfully requested.

<u>Rejection Under 35 U.S.C. §103</u>

The Examiner has rejected claims 1, 2, 4, 6-11, 14, 17, 18, 19, 21-25, 28, 31, 32, and 35-40 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Pat. No. 5,143,157 to Harms.

The Examiner finds that Harms teaches an aqueous fluid gelled with a polysaccharide wherein a gluconic acid and its salts, and a copper compound may be used as breakers (col. 2, lines 10-33). The Harms composition may be used up to temperatures of about 140 degrees F (col. 1, lines 57-60). The total concentration of breaker would be within the scope of the present invention (col. 4, lines 19-42). A compound which raises the pH of the composition, such as diethanolamine is taught in Example 1. The Examiner admits that Harms differs from the present invention in that a specific example utilizing gluconic acid or its salts and a copper compound is not disclosed. The Examiner further finds that Harms teaches that more than one compound selected from the group (c) may be used (col. 3, lines 21-22). The Examiner finds further that case law has held that employing two or more materials for the same purpose that they are individually taught as being useful is not patentable (citing *In re Kerkhoven*). The Examiner thus contends that the utility of a copper compound, and a gluconic acid or its salts in combination as a breaker would thus be obvious to one of ordinary skill in the art in view of the teachings of Harms that they are individually used for such purpose.

The Applicant respectfully traverses.

To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker,* 977 F.2d 1443, 1445; 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992).

Harms teaches a persulfate/catalyst breaker system that effects controlled breaks of polysaccharide gelled fluids in the ambient temperature range without interfering with fluid performance (Abstract). A persulfate breaker is an oxidizer breaker. In case there is doubt about this, the Examiner's attention is respectfully directed to the enclosed excerpt from S. Parker, *McGraw-Hill Encyclopedia of Chemistry,* McGraw-Hill, New York, 1983, p. 741 where persulfate is identified as an oxidizing agent. Harms consistently and repeatedly requires the presence of an oxidizing persulfate breaker. The Examiner's attention is respectfully directed to the following locations in Harms:

Column 1, lines 57-60, and 67-68;
Column 2, lines 17-20;
Column 3, lines 61-64;
Column 4, lines 9-10, and 28-30;
Column 5, lines 1-45, Table, third column thereof;
Column 5, lines 49-52;
Claim 1, column 6, lines 58-59;
Claims 3 and 4, column 7, lines 1-7;
Claim 10, column 7, lines 36-37; and
Claim 12, column 8, line 16.

Harms does not teach or suggest a breaker system, method of breaking viscosity or fluid without a persulfate breaker, *i.e.* an oxidizer breaker.

The Applicant would additionally respectfully direct the Examiner's attention to claims 1, 19 and 31 herein which have been amended to recite the absence of an oxidizer breaker. Support for these amendments is found in the specification, page 4, lines 24-25 and claims 3, 20, and 33, as originally filed and thus the amendments do not constitute improper insertions of new matter. Because Harms does not and cannot teach or suggest breaker system, method of breaking viscosity or fluid without a persulfate breaker, *i.e.* an oxidizer breaker, the Applicant

respectfully submits that a *prima facie* rejection of the amended claims cannot be properly made under 35 U.S.C. §103 relying upon Harms. Reconsideration is respectfully requested.

It is respectfully submitted that the amendments and arguments presented above overcome all of the rejections. Reconsideration and allowance of the claims are respectfully requested. The Examiner is respectfully reminded of his duty to indicate allowable subject matter. The Examiner is invited to call the Applicant's attorney at the number below for any reason, especially any reason that may help advance the prosecution.

Respectfully submitted,
JAMES B. CREWS,

David L. Mossman
Registration No. 29,570
Attorney for Applicant
Telephone No. 512/219-4026
Facsimile No. 512/219-4036
Madan, Mossman & Sriram, P.C.
2603 Augusta, Suite 700
Houston, TX 77057-5638

McGraw-Hill Encyclopedia of CHEMISTRY

Sybil P. Parker
Editor in Chief

McGraw Hill Book Company

New York St. Louis San Francisco
Auckland Bogotá Guatemala Hamburg Johannesburg
Lisbon London Madrid Mexico Montreal
New Delhi Panama Paris San Juan São Paulo
Singapore Sydney Tokyo Toronto

1234567890 KPKP 89876543

ISBN 0-07-045484-1

Library of Congress Cataloging in Publication Data

McGraw-Hill encyclopedia of chemistry.

"All of the material in this volume has been
published previously in the McGraw-Hill encyclopedia
of science & technology, fifth edition"—T.p. verso.
Bibliography: p.
Includes index.
1. Chemistry—Dictionaries. I. Parker, Sybil P.
II. McGraw-Hill Book Company. III. McGraw-Hill
encyclopedia of science & technology. 5th ed.
QD5.M36 1983 540'.3'21 82-21665
ISBN 0-07-045484-1

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ered bleaches for the home laundry, and in xtile industry for oxidation of vat and sulfur on cotton and rayon. The hydroperoxidates dium carbonate, sodium pyrophosphate, and are also available. Fields of use for the hydro- dates include cosmetics and photography. YDROGEN PEROXIDE.

anic peroxides. As a group, organic perox- are more hazardous than the inorganic perox- Many of the former are flammable or detona- hus restricting their availability. Some are tionally stable (di-*tert*-butyl peroxide). Manu- re is chiefly through reaction of the organic ate with H_2O_2; air oxidation is also used feasible.

acetic acid [$CH_3(C{=}O)OOH$], prepared from c acid and H_2O_2, is the only organic peracid d commercially (40% by weight in acetic A manufacturing process involving air oxida- f acetaldehyde has been developed. Peracet- id, as well as performic or perpropionic, may be generated at the site from H_2O_2, organic and catalyst. Major applications of peracetic are in the synthesis of epoxidized and hydrox- d compounds and as a bactericide, fungicide, terilizing agent for processing equipment.

benzoyl peroxide, the most important aromat- yl peroxide, is a white powder, stable at room erature and explosible with heating. It is ufactured by reaction of benzoyl chloride and line H_2O_2. Major uses include polymer manu- re (0.1–0.2% in the monomer to initiate the erization) and flour bleaching (when mixed phosphates and other ingredients meeting dards for flour-treating formulations).

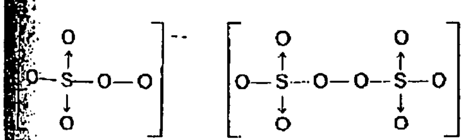
umene hydroperoxide [$C_6H_5C(CH_3)_2OOH$], a less to pale-yellow liquid, produced by air ation of isopropyl benzene, is no longer used nsively as a polymerization catalyst. However, eady cleavage in acid solution to phenol and one has rendered it a tonnage intermediate the commercial production of phenol. *See* CTROCHEMICAL PROCESS; OXIDATION PROC- OXIDATION-REDUCTION; OXIDIZING AGENT; GEN.

[SAMUEL S. NAISTAT]

bliography: F. A. Cotton and G. Wilkinson, *anced Inorganic Chemistry: A Comprehensive* t, 4th ed., 1980; D. Swern (ed.), *Organic Per- des*, vol. 3, 1972, reprint 1980.

rsulfate

oup of compounds more correctly known as oxysulfates. Persulfates are salts of the two xy acids of sulfur, peroxymonosulfuric acid SO_5) and peroxydisulfuric acid ($H_2S_2O_8$). All e compounds contain sulfur in an oxidation e of 6+, the same as in sulfates. The unusual ng about their structure is the presence of the oxy group, —O—O—, as shown below.



oxymonosulfate ion   Peroxydisulfate ion

Ammonium peroxydisulfate is produced by the electrolytic oxidation of ammonium bisulfate solution. It is used as an oxidizing agent and a bleach, and is converted to other salts, such as potassium peroxydisulfate which is used as a polymerization promoter. *See* PEROXIDE; SULFUR.

[E. EUGENE WEAVER]

Petrochemical

One of a large number of substantially pure chemical substances produced commercially from petroleum or natural gas. Ordinarily the term does not include hydrocarbon fuels and lubricants nor chemicals produced by other than the processor handling the petroleum raw material. Organic compounds make up the great bulk, as well as number, of petrochemicals, but several inorganic compounds (ammonia, carbon black, sulfur, and hydrogen peroxide) also are produced in large amounts.

Petrochemicals should not be regarded as a particular type or class of chemical, since all of them have been, and many still are, made from other raw materials; for example, benzene, phenol, naphthalene, and acetylene are made from coal, glycerol from fats, ethyl alcohol from agricultural crops, and sulfur from deposits of the element or from metal ores.

A majority of the chemicals once made from other raw materials came to be made entirely, or almost entirely, from petroleum or natural gas. Examples are acetone, originally derived from wood distillation and later by fermentation of agri-

Table 1. Petrochemicals from methane

Basic derivatives and sources	Uses
Ammonia	Agricultural chemicals
Petroleum sources	(as ammonia, salts, urea)
Methane hydrogen	Fibers, plastics
Refinery hydrogen	Industrial explosives
Electrolytic, coal	Other
Carbon black	Rubber compounding
Liquid petroleum	Printing ink, paint,
Natural gas	and other
Methanol	Formaldehyde (mainly for
Petroleum sources	resins)
Methane	Methyl esters (polyester
Propane-butane	fibers), amines, and other
Coal	chemicals
	Solvents
	Other
Chloromethanes	Chlorofluorcarbons for
Methane chlorination	refrigerants, aerosols,
Other sources	solvents, cleaners, grain
	fumigant
Acetylene	Vinyl chloride, vinyl
Petroleum	acetate
Calcium carbide	Chloroprene (neoprene)
	Chloroethylenes
	Acrylonitrile
	Other chemical uses
	Nonchemical uses
Hydrogen cyanide	Acrylonitrile
	Adiponitrile
	Methyl methacrylate
	Other